A Comparison of Artificial Intelligence and Human Doctors for the Purpose of Triage and Diagnosis

Year: 2020 | Citations: 110 | Authors: Adam Baker, Yura N. Perov, Katherine Middleton, J. Baxter, D. Mullarkey

Abstract

AI virtual assistants have significant potential to alleviate the pressure on overly burdened healthcare systems by enabling patients to self-assess their symptoms and to seek further care when appropriate. For these systems to make a meaningful contribution to healthcare globally, they must be trusted by patients and healthcare professionals alike, and service the needs of patients in diverse regions and segments of the population. We developed an AI virtual assistant which provides patients with triage and diagnostic information. Crucially, the system is based on a generative model, which allows for relatively straightforward re-parameterization to reflect local disease and risk factor burden in diverse regions and population segments. This is an appealing property, particularly when considering the potential of AI systems to improve the provision of healthcare on a global scale in many regions and for both developing and developed countries. We performed a prospective validation study of the accuracy and safety of the AI system and human doctors. Importantly, we assessed the accuracy and safety of both the AI and human doctors independently against identical clinical cases and, unlike previous studies, also accounted for the information gathering process of both agents. Overall, we found that the AI system is able to provide patients with triage and diagnostic information with a level of clinical accuracy and safety comparable to that of human doctors. Through this approach and study, we hope to start building trust in AI-powered systems by directly comparing their performance to human doctors, who do not always agree with each other on the cause of patients' symptoms or the most appropriate triage recommendation.